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# Medical Times

The Journal of the  
American Medical Profession



Hemoglobin Loss • Geriatrics  
Doctors and Rationing  
Cancer of the Breast  
Cultural Medicine

Medical Book News

Editorials

Contemporary Progress

Vol. 71

No. 8

Address all Exchanges and Books for Review to 1313 Bedford Avenue, Brooklyn, N. Y.

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## EDITORIALS

### *The Increasing (?) Medical Inexpediency of War*

ACCORDING to Dr. James B. McClinton, writing in the April, 1943 issue of *Maclean's Magazine* (a Canadian publication), "one-third of the soldiers at Dunkirk developed duodenal ulcer. Twenty per cent of Canadian soldiers returned to Canada on account of sickness suffered from this ailment."

The frequency of peptic ulcer among the men who man the merchant marine is a commonplace fact.

Some of the figures on the incidence of mental ailments among the armed forces are disturbing, assuming their accuracy.

General Hershey, in the course of a recent Washington hearing reported in the press, confessed to some wondering regarding the fitness of modern civilized men for warfare, so great were the rejections and so great the service breakdowns.

We suppose there are no figures available as to difficulties of like nature in Germany. If it is true that "glorious" war does not impose the same strains upon the Germans as upon others, we should have some interesting statistics bearing upon this special point when the war is ended. We suspect this allegedly special German fortitude and aptitude to be a false assumption. Hitler himself failed in promotion during the first World War because of hysteria which in his well known case took the form of blindness.

We have no reason to believe that the soldiers of Harold and William in 1066 ever suffered from ulcer, nor indeed do we recall any records of such a syndrome in the medical and surgical archives dealing with our own Civil War.

We are still capable of waging war, but the future may see less and less ex-



pediency in it, from the medical point of view, despite compensating factors such as advances in military hygiene, immunization, chemotherapy, etc. Realization of the trend, if it is the trend, ought to foster the establishment of permanent peace by some such means as Sir Norman Angell's proposal of a global Monroe Doctrine, with an attack upon one nation

an attack upon all.

### *Another Paradox*

PLANNING for medical collectivism has to do with the economic man. In the main, considerations of this sort are materialistic.

At the very time that this sordid concept is threatening to reach full fruition, we find the profession becoming more and more engrossed with psychosomatic medicine, which deals with man's total personality—really a renaissance of the old "art of medicine," as distinguished from the science of medicine.

Perhaps this intensifying interest in the spiritual man represents a reaction against the phony concepts of our marihuana smokers. What is it if it is not this? One cannot conceive of a medical collectivism in which careful account will be taken of man's non-materialistic needs. He will still have such needs but they will not be taken into any account, for those charged with responsibility for him will regard him as a mere mechanism. The only thing of importance will be the more or less absolute State.

A sharp struggle seemingly impends between the new medical humanism and the new medical collectivism. Which will win? Choose your side now.

### *A False Symbol of Medicine*

THE *Westchester Medical Bulletin* calls attention—as we have ourselves on various occasions—to the improper use

of the caduceus as the symbol of medicine. The winged caduceus, with its two serpents, signifies Hermes, or Mercury, god of robbers, traitors, and of souls on their way to Hades, whereas the Grecian god of medicine, Aesculapius, is properly represented by a simple staff with a single serpent entwined about it.

This misuse has been perpetuated because of the adoption of the caduceus as the alleged emblem of medicine by the Medical Corps of the Army of the United States.

The winged caduceus is not the symbol of the medical profession. But this great error seems to have evolved a self-perpetuating force, resisting all protest.

#### *Needed—More Babies*

**M**ARK SULLIVAN, distinguished historian and journalist, recently

diagrammed the population issue very effectively (*New York Herald Tribune*, July 4, 1943). He sees an increase in the nation's birth rate as necessary if we are to defeat Japan in a long-range struggle for racial survival, "as Japan means it to be." Our survival as a first-rate power, he says, depends absolutely upon the production of sufficient man power, "in the kind of world we live in."

This assumes an intermittent war lasting for generations, as may well be the case. "In any such war the nation or race whose mothers are fruitful will survive, the other not." Only "more babies will win the war."

In our June issue we showed the sound statistical basis for affirmations like Mark Sullivan's.



#### *OCD Publishes New Recommendations on Burns and Wound Infections in Air Raid Casualties*

**T**HE Medical Division of the Office of Civilian Defense has revised its pamphlet "Treatment of Burns and Prevention of Wound Infections" to incorporate new techniques that have been developed within the past year. The recommendations in this pamphlet are based on recent directions of the Committee on Chemotherapeutic and Other Agents and the Subcommittee on Burns of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Originally drawn up by these committees for the Armed Forces, the recommendations have been modified to adapt them to the problems involved in the treatment of civilian casualties.

Recommendations for the use of sulfonamides are accompanied by the observation that these drugs must be used more cautiously in the treatment of civilian wounds than is necessary in the care of military casualties, for the following reasons:

"The injured may include individuals of all ages and with various types of pre-existing disease, instead of a selected

group of healthy young males. The possibility of toxic effects is therefore greatly enhanced. Moreover, it is assumed that in civilian injuries, hospitalization will be possible in a relatively short time, whereas in military operations such is not always the case. This usually makes it possible to postpone all consideration of chemotherapy until the injured have been hospitalized. It is then possible to administer sulfonamides with better safeguards and to consider such contra-indications as other pathological conditions or known sensitivity to individual drugs. The dangers of dehydration can also be better prevented or overcome under such circumstances."

In a discussion of intra-abdominal wounds leading to perforation of the hollow viscera, the revised pamphlet advises sodium sulfadiazine as the drug of choice for parenteral administration, which is considered preferable to oral therapy during the first 48 hours. Sulfanilamide was recommended in the previous edition. Concentrated solutions of sodium sulfadiazine are not recommended for subcutaneous or intramuscular routes, but it is pointed out that weak solutions (0.5%) may be used with little danger of sloughing of the tissues.



# HEMORRHAGE AND POSTOPERATIVE HEMOGLOBIN LOSS

ERIC PONDER, M.D., D.Sc.

Mineola, New York

THE sequence of events which ordinarily follows the loss of a quantity of blood, e.g., 500 c.c., by a normal person is that the volume of the vascular system is reduced by vasoconstriction so as to contain the smaller volume of blood at essentially the same pressure as before, the initial volume of about 5000 c.c. (for an individual weighing 70 kilos) decreasing to about 4500 c.c. About 500 c.c. of fluid is then transferred from the extravascular regions (tissues and extracellular fluid) in order to restore the volume to the original figure of 5000 c.c. The contents of the blood stream are diluted by the addition of this fluid, so that the number of red cells and the amount of hemoglobin per unit volume falls. The transfer of fluid is rapid at first, and becomes slower to reach completion about the third day after the hemorrhage (Ebert, Stead, and Gibson, 1941), at which time the fall in hemoglobin should be at its maximum. Lands and Johnson (1942) have made some very interesting observations on the source of the fluid, which is probably intracellular water (plus salts) made available through the destruction of protoplasm. The red cell count and hemoglobin concentration then begin to rise again as a result of the production of new red cells by the hemopoietic system; the rate of regeneration is very variable (Fowler and Barer, 1942, Alstead, 1943), but the original value for hemoglobin concentration is usually reached in about 4 weeks.

IF this description of the sequence of events were complete one would expect that the postoperative fall in hemoglobin concentration, as measured when at its maximum on the third or fourth postoperative day, would be proportional to the quantity of blood lost, and during the past year Dr. Seaman and I have been carrying out experiments to see if this

is so (Seaman and Ponder, 1943). The loss of blood at operation was determined by a method similar to that of Gatch and Little (1924), all sponges, towels, etc., stained with the patient's blood being soaked for some hours in a pail containing 15 litres of water, and then, after wringing out, in a second pail containing 10 litres of water. A 15 c.c. sample from the first pail, added to a 10 c.c. sample from the second, gives a sample of hemoglobin to which an equal volume of 2 per cent HCl is added to make a solution of acid hematin. This is matched photometrically (Klett-Summerson or Lumetron photometer) against a solution of acid hematin made from the patient's blood immediately preoperatively. The quantity of blood lost in c.c. is calculated from the result, and is finally expressed as a loss in c.c. per 70 kilos of the patient's body weight.

Determinations of the patient's postoperative hemoglobin concentration (venous blood) are then made at the same time each day for several days. If postoperative dehydration is avoided, the values usually fall to a minimum reached on the third or fourth postoperative day (Fig. 1, inset), and the difference between the original value and the minimum value constitutes the postoperative fall. This is expressed as a percentage of the original hemoglobin concentration.

IF we now plot the postoperative fall in hemoglobin concentration against the amount of blood lost at operation, we obtain an unexpected result (Fig. 1). If the blood lost were replaced by the transfer of extravascular fluid so as to restore the vascular system to its original volume (about 0.07 of the body weight, or 5 litres for a 70 kilo man) the relation between the hemoglobin fall and blood loss would be represented by the straight line in the figure, a 500 c.c. loss, for example, resulting in a 10 per cent maximum hemoglobin fall. The large cross, square, and circle are the averages from data by various workers who have investigated the effect of blood loss on the hemoglobin concentration in blood donors, and the individual dots represent some of our own

From the Nassau Hospital, Mineola.

Read before the Scientific Session of the Associated Physicians of Long Island, at the Nassau Hospital, June 15th, 1943.

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data for postoperative material. It will be seen that some of the points lie on, or almost on, the straight line (the limits of allowable experimental error are shown by the dotted lines). In some cases, however, the discrepancies are very great, the fall in hemoglobin concentration being far greater than can be accounted for by the quantity of blood lost. These discrepancies are greatest and most frequent in the postoperative material, but even blood donors may show a hemoglobin fall out of proportion to the amount of blood withdrawn (Alstead, 1943).

Various explanations can be put forward to account for this result:

(a) It is possible that the loss of blood is followed by a decrease in vascular tone, so that the volume of the vascular system three days later, when fluid has entered it from the extravascular spaces, is greater than it was originally. Any increase in the volume of the spleen would bring about such an increase, which might also be contributed to by increases in the volume of other blood depots such as the skin plexuses. The broken lines in Fig. 1 show the relation which would obtain between the observed postoperative fall in hemoglobin concentration and the amount of blood lost if the volume of the vascular system were to increase from 5 to 6 litres (line i) and from 5 to 7 litres (line ii). But even such large increases in volume would not be enough to account for many of the observed points, quite apart from the question as to whether they are likely to occur and to be maintained for periods of days after such operations as mastectomy, pyloroplasty, etc.

(b) Another possibility is that the production of red cells and of hemoglobin may be depressed, or even arrested, postoperatively, and that this depression of hemopoietic activity persists for a variable period which may amount to days or even weeks. Since the life of the red cell is variously estimated as being from 20 to 60 days, the daily rate of red cell and of hemoglobin production in the normal steady state is between 5 per cent and 1.7 per cent. If production were to cease entirely, a hemoglobin deficit of from 5 to 15 per cent, in excess of the deficit due directly to the blood loss, might accumulate in the course of 3 postoperative

days. Taken alone, however, even a complete arrest of hemopoiesis would not be enough to account for all the postoperative falls in hemoglobin observed.

(c) Some of the greatest disproportions found between the quantity of blood lost and the fall in hemoglobin have occurred in cases in which sulfanilamide (4 gm.) was placed in the abdominal cavity after partial gastrectomy, partial colon resection, and similar operations. While sulfanilamide cannot be held responsible for most of the disproportionately great postoperative falls in hemoglobin (which occur even in cases in which the drug was not used), we have to entertain the possibility that the drug may sometimes cause a hemolytic anemia. This is an action of the sulfonamides which is being reported with increasing frequency. The possibility of some other hemolytic process resulting in an increased rate of red cell destruction has also to be considered. It is now recognized that the circulating red cell exists in a state of more or less stable equilibrium, being constantly subjected to the action of hemolysins, the nature of only a few of which is yet known. The continual lytic action of these substances (the bile salts, the soaps appearing in chyle, substances apparently related to lysolecithin, etc.) is kept at a constant level by the inhibitors of the plasma, which are principally the plasma proteins and the plasma cholesterol. The plasma proteins, at least, are known to be reduced postoperatively, and this reduction would operate in the direction of favoring red cell destruction by intravascular lysins. Looked at in this way, a postoperative hemolytic process could be the result of a depression of the normal anti-hemolytic power of plasma.

**M**UCH further investigation will be required before we can say which of these explanations is correct; indeed, at the moment it looks as if all of them may enter into the final interpretation. Meanwhile it is sufficient to remark that the idea involved is always that of a temporary postoperative depression of the normal physiological state, with the result that there is a loss of normal vascular tone, a reduction in the normal hemopoietic activity, or a decrease in red cell stability (however brought about), as the case may be. It will be observed (Fig.

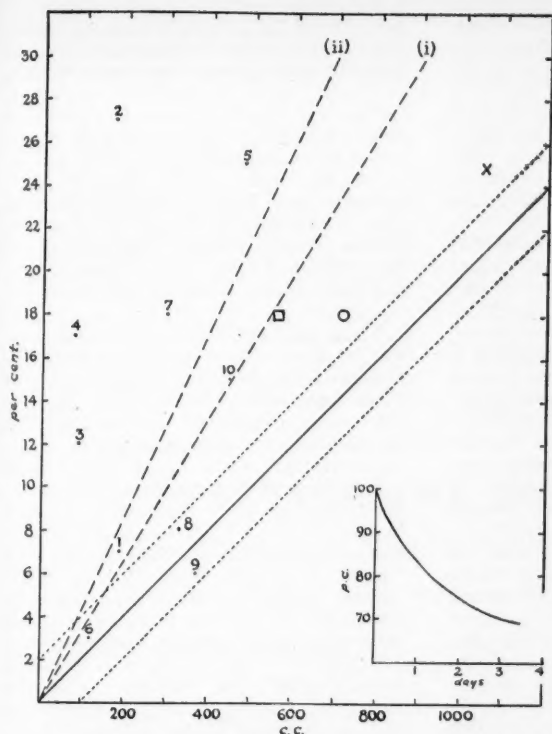


Fig. 1

Fall in hemoglobin concentration, as a percentage of the initial value, plotted against blood lost at operation, per 70 kilos body weight. The solid straight line shows the "expected" relation, and the lines on either side of it show the limits of allowable error. Cross, blood donors, average of data of Ebert, Stead, and Gibson; circle, blood donors, average of Fowler and Barer's data. Individual points: 1, 2, 3, partial gastrectomy; 4, pyloroplasty; 5, partial colon resection; 6, cholecystectomy; 7, 8, hysterectomy; 9, 10, mastectomy. Inset shows typical course of postoperative fall in hemoglobin during the first few days. For explanation of the lines marked (i) and (ii), see text.

1) that the same fall in hemoglobin does not result from the same blood loss even for the same operation, and so we have to conclude that the postoperative depressions of function, whatever they ultimately turn out to be, constitute an in-

dividual response which varies from person to person. The Figure, for example, shows two cases of partial gastrectomy in which the blood losses were not greatly different (190 c.c. and 170 c.c.) but in which the postoperative fall in hemoglobin was 7 per cent in the one case and 27 per cent in the other. Speaking generally, and as judged from the patient's postoperative course for the first few days, an operation seems to be less well tolerated when the hemoglobin fall is great in proportion to the amount of blood lost than when it is not; these are the cases which usually have a long convalescence, and they are certainly the cases in which red cell and hemoglobin regeneration take the longest time. The disproportionately great fall in hemoglobin concentration also seems to occur more constantly after abdominal operations than after operations

such as mastectomy and thyroidectomy, but individual variation plays so important a part that very extensive investigation would be required to establish this point. In some people, the disproportionate hemoglobin fall occurs even after withdrawal of blood from a vein (Alstead, 1943), a fact which in itself establishes that the phenomenon is not a result of anesthesia. Alstead's results are very similar to those of Seaman and myself, and the explanations he suggests to account for them are substantially the same, although he thinks that the discrepancies between the volume of blood lost and the observed fall in hemoglobin are probably due to the transfer of excessive amounts of fluid from the tissue spaces to the blood stream.

#### Discussion

A conclusion which can be drawn at once from these observations is that the extent to which a patient's red cell count and hemoglobin concentration fall after a major operation is often out of all pro-

portion to the quantity of blood lost. Some surgeons have recognized this intuitively, and give a 500 c.c. postoperative transfusion routinely, following it with another a few days later. This is sound practice if the blood loss is great, and there might be something to be said for it in most cases, were it not for the inconvenience and the inevitable occasional transfusion reaction.

To restrict the discussion to whether the red cell count of the postoperative patient is to be raised by transfusion would, however, amount to taking a very restricted view of the situation, for the reduction in red cells and hemoglobin is only one manifestation of a much more general disturbance. The disproportionately great fall in hemoglobin concentration after surgical operations has its counterpart in a fall in plasma protein concentration which has been observed by nearly all investigators who have studied patients during the first few postoperative days. The transfer of fluid from the tissues which restore the vascular volume after blood loss dilutes the circulating blood with respect to its protein content as well as with respect to its hemoglobin, but again the maximum fall in plasma protein observed is considerably greater than that which corresponds to the measured amount of blood lost at operation (Seaman and Ponder, 1943). There seems to be a postoperative depression of the mechanism which keeps the plasma proteins at their normal level, just as there is a postoperative depression of erythropoiesis, and both these disturbances of normal function are apparently related to the disturbance of nitrogen metabolism which Brunschwig, Clark, and Corbin (1942) have recently described in patients recovering from major surgical procedures. They found that the nitrogen loss in such patients varies from about 4 grams to about 175 grams in a ten day period, most of the loss occurring within the first few days. This negative nitrogen balance is partly due, of course, to the fact that nitrogen intake is restricted after operation, but operative trauma itself seems to be the principal cause of the increased nitrogen catabolism. This effect is probably related to the "toxic destruction of protein" which occurs when there is fever and absorption of toxic material, and it is not surprising to find that under the same conditions there is a dis-

turbance of the particular form of metabolism which results in hemoglobin building (Whipple, 1938). The mere existence of tissue injury is apparently sufficient. Gordon and Kleinberg showed in 1936 that simple laparotomy in guinea pigs is followed by a postoperative anemia comparable with that brought about by splenectomy, and Chanutin, Hortenstein, Cole, and Ludewig (1938) found that the plasma proteins undergo complex changes, the albumin falling and the globulin and fibrinogen rising, after simple laparotomy in the rat.

I have the impression that the only reason for the list of postoperative metabolic changes being so small is that so few of them have been investigated. Perhaps the recent decision of the National Research Council's Subcommittee on Clinical Investigation to direct attention to the problems of convalescence and recovery from operation, will stimulate research in this direction. The Committee is asking such questions as: What is the real nature of convalescence? Why is it frequently prolonged after the fever has subsided? Why must there be a period of gradual recovery after major surgery? The present state of affairs is certainly unsatisfactory, for we have only the sketchiest knowledge of the metabolism and the responses of the postoperative patient, and in proportion to the incompleteness of our knowledge our methods of postoperative care must be non-logical.

**I**N conclusion something ought to be said about the relation of these results to "postoperative shock." Every one of us knows that some patients tolerate operations better than others do and that some operations are followed by greater prostration than others, although shock, in the currently defined sense of the word, is not demonstrable by lowered blood pressure values. This prostration is what the layman refers to when he speaks about "the shock of the operation." Every clinician recognizes it, but would be hard put to it to define it. Apparently the power of physiological regulation which these patients have at their disposal is not sufficient to meet the strain put upon it by the operation, and so they exhibit a "post-operative inadequacy" not unlike Alvarez' (1942) "constitutional inadequacy of persons unable to stand up to the strain of life." At present these terms are used

without any exact definition, although they unquestionably describe something real, and the possibility is worth considering that the patients who show the greatest

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postoperative "inadequacy" are those who suffer the greatest disturbances of metabolism, including that of nitrogen, of hemoglobin, and of the plasma proteins.

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## SOCIOLOGICAL MEDICINE

### DOCTORS AND THE RATIONING BOARDS

GEORGE H. HOXIE, M.D., F.A.C.P.

Berkeley, California

Doctors in their organizations react to the war rationing boards' requests for cooperation variously: from refusal to complete cooperation—from the county society that refused to appoint an advisory committee on the ground that such matters were in the domain of dietitians, to the state and county societies that appointed advisory committees and tried to help in every way. The first attitude would seem to spring from arrogance, or possibly from ignorance of what is being done by the boards. At any rate, the members of such non-cooperative societies will object seriously when their requests for supplemental rations for their patients are "processed" by nurses and dietitians.

In their individual capacities doctors again show all variations—from the men who tell their patients to write out their own diets and they (the doctors) will sign for them, to those who refuse to be bothered by such requests for special foods.

IT is interesting to study the certificates sent into the boards: Just now a re-

quest for some six hundred points of processed foods (canned goods) came in for diverticulitis. One wonders why such a patient would not be better served by having foods pureed in her own kitchen. Is it laziness? Or simply being in a rut after reading advertisements?

Similarly one cannot help being struck by the frequency of requests for canned fruits for enteritis and enterocolitis. The observer must wonder why canned fruits are so much better than fresh fruits—or for that matter how such patients can tolerate such amounts of fruits and fruit juices. Are they perchance feeding the entire family? Most observant doctors are chary about giving fruits and fruit juices to patients with inflammations of the bowel.

One can understand the call for meats in diabetes. But it puzzles one to find that the more frequent and more insistent demand is for canned fruit and fruit juices. Here again one must suspect the applicants of a desire for pleasant foods easily prepared rather than the correct foods prepared the hard way. When one finds that these patients are taking enough insulin to keep the appetites stimulated and to balance these canned fruit juices



one wonders whether it is the doctor or the patient who makes the prescription.

But it is allergy that caps the climax. If one were to take seriously the claims of the patients as to what they couldn't eat, one would despair of the survival of the human race. Here again it would seem that only a diet of canned fruit juices would keep them alive! And the doctors sign the certificates!

If there is a shortage of material for making cans, if there is a shortage of meat, if the problem of distribution is serious, it is high time that the doctors think on these things and consider whether patriotism requires them to evaluate more highly the demands of their neurotic and selfish patients, or the needs of the millions of workers who must be the salvation of America.

The following are samples of requests for special foods.

1. For "thyroid condition" the extra foods listed below—

Pineapple juice	—	16 oz. per week
tomato juice	—	16 oz. per week
grapefruit juice	—	16 oz. per week
apple juice	—	8 oz. per week
grape juice	—	8 oz. per week

2. For "pemphigus" the extra foods listed below—  
All fruit juices and — 400 points or about  
some canned fruit. 90 lbs. for two months.

3. For "Diabetes"—	
canned corn	—12 oz. 3 cans weekly
unsweetened pears	—8 oz. } 4 cans of any
unsweetened apricots	—8 oz. } one of these
unsweetened peaches	—8 oz. } three weekly
meat	—3½ lbs. weekly.

4. For "diverticulitis"—

Processed foods for 60 day period

60 cans (assorted) pureed baby food	—4¾ oz.
6 cans pea soup (Heinz)	—11 oz.
6 cans tomato soup (Campbell's)	—10½ oz.
4 cans chicken-rice soup	—12½ fl. oz.
2 cans peaches (sliced)	—1 lb. 12 oz.
5 cans peaches (halves)	—1 lb. 13 oz.
2 cans apricots (peeled)	—1 lb.
7 cans pears (halves)	—1 lb. 13 oz.
10 grapefruit juice	—1 pt. 2 fl. oz.
6 cans tomato juice	—1 pt. 2 fl. oz.

5. For "arthritis and anemia"—

Amount needed weekly	
1 can grapefruit	— No. 2 can
1 can figs	— No. 2 can
1 can string beans	— No. 2 can
1 can beets	— No. 2 can
1 can grapefruit juice	— No. 2 can
8 points meat	

6. For "chronic arthritis"—

Amount per week	
1 gallon pineapple juice (unsweetened)	

7. For "chronic pemphigus"—

All fruit juices and—400 points or about	
some canned fruit.	90 lbs. for two months

8. For "diabetes"—

Amount per week	
Meats of all kinds	— 5 lbs.
Soup	— 3 cans
Butter	— 1 lb.
Vegetable juice	— 3 cans

9. For "duodenal ulcer"—

Amount per week	
Bacon	— 1 lb.
Beef	— 1 lb.
Lamb	— 1 lb.

10. For "diabetes mellitus"—

Amount per week	
Canned fruit	— 3 cans
Canned fruit juice	— 3 cans
Canned vegetables	— 4 cans
Water packed peaches, pineapple	

Grapefruit juice	— 3 lbs. meat
Canned tomatoes	
About 3 lbs. meat	

11. For "colitis"—

Amount per week	
One can peaches	— 1 lb. 14 oz.
One can pears	— 1 lb. 14 oz.
Two fruit cocktails	— 1 lb. 14 oz.
Four cans condensed soup	

12. For "gastro-intestinal allergy"—

Amount per week	
Sugar	— 2 lbs.
Meat	— 2 lbs.

13. For "lupus erythematosus" (disseminated)—

pineapple juice	— 8 oz. per day
tomato juice	— 8 oz. per day
peaches (canned)	—12 oz. per day
meat	
lamb chop	— 1 daily
liver or steak	—¼ lb. per day

14. For "diabetes"—

canned corn	—12 oz.—3 cans weekly
pears (unsweetened)	— 8 oz. }
apricots (unsweetened)	— 8 oz. } 4 cans of any one
peaches (unsweetened)	— 8 oz. } of these three
	— 8 oz. } weekly
meat	— 3½ lbs. weekly.

2600 Ridge Road.



# GERIATRICS

## CLINICOPATHOLOGICAL CASE REPORTS

**DONALD deF. BAUER, M.D., C.M.**

Department of Pathology,  
Duke University School  
of Medicine  
Durham, North Carolina

### CASE I

Chief complaint: "heart trouble for forty years."

This 70-year-old man had suffered dyspnea, weakness, and cough productive of foamy, pink sputum, for several weeks. He had been ambulatory, often walking as much as five miles daily, until three months prior to admission when he suffered an attack of "flu." Since that time he had been confined to his bed, and his presenting symptoms had been prominent. For the week prior to admission the patient was orthopneic and the quantity of his sputum was markedly increased. For about twenty-five years he had been taking tincture of digitalis intermittently in varying dosage.

For six months he had been progressively more constipated, requiring laxatives daily, and passing dark bloody stools, sometimes pencil-sized. Complaints of vague, dull epigastric discomfort had been present, with associated decrease of appetite.

The patient had not had scarlet fever, joint pains or "rheumatism." At the age of 21 he had been told by a physician that he had a heart murmur. He had had no symptoms of decompensation antedating the present episode. His general health had been excellent, although in the prime of life, while engaged in his work as a farmer, he averaged only 110 pounds in weight (height 5 feet 4 inches). Hemorrhoids had been present for a decade.

The patient was white-haired and appeared to be about five years younger than his stated age. At rest he was orthopneic and dyspneic, frequently coughing up frothy, clear sputum. Senile conjunctivitis, blepharitis, enophthalmos, and arcus sen-

ilis were noted. The pupils were constricted (morphia had been administered before admission), equal, and poorly reactive to light. The lips were cyanotic, the tongue was coated, and the teeth were dirty and carious. The cervical veins were distended; there was marked pulsation in the suprasternal notch. The antero-posterior diameter of the chest was markedly increased. Respirations were chiefly abdominal in type. Many moist, crackling, inspiratory râles were audible in both bases. Precordial bulge was noted. The left border of cardiac dullness was in the left anterior axillary line in the fifth interspace, and the right border was three centimeters to the right of the mid-sternal line in the fourth interspace. The blood pressure was 120 systolic and 70 diastolic. The pulse was totally irregular with a rate of 130 at the apex and 100 at the wrist. A marked diastolic thrill was palpable at the apex. The mitral first sound was loud and snapping and was followed by a widely transmitted, blowing, harsh, systolic murmur. An apical, loud, crescendo, rumbling murmur occupying most of diastole followed the mitral second sound. The pulmonic second sound was accentuated. Peripheral vessels were markedly sclerotic. The liver was enlarged to seven centimeters below the right costal margin, and it was non-pulsatile, smooth and tender. There was no ascites. No other abdominal organs were felt. A hard, oval mass was found in the left lower quadrant apparently attached to the sigmoid colon. It was about four by three centimeters in size, slightly movable, and non-tender. Prolapsed, slightly edematous hemorrhoids were visible. No abnormal mass was palpable on rectal examination. The extremities showed no clubbing or varicose veins, but the ankles were slightly edematous and the nail beds were cyanotic.

Urinalysis revealed no abnormalities. The hemoglobin was 11.5 grams. There were 4.2 million red blood cells and 7.7 thousand white blood cells with a normal

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differential. The fasting blood sugar was 85 milligrams per cent. The EKG, taken on the day of admission, showed a rate of 115 with auricular fibrillation and moderate right axis deviation.

**T**HE patient was treated with bed rest for a few days, and with sedatives as required. Further digitalization was essayed with favorable results. Improvement was rapid and his course was afebrile. By the twelfth hospital day his pulse rate had decreased to an average of eighty-five, although fibrillation continued. The minimal peripheral edema had subsided, and the patient was permitted to be ambulatory although he continued to be weak, fatiguing easily, and complaining of exertional dyspnea. Difficulty with bowel movements was prominent. He strained at the stool, suffering prolapse of his hemorrhoids, with bleeding and considerable pain. He had improved sufficiently so that sigmoidoscopic examination could be performed, revealing a constricting, partially obstructing lesion about four centimeters from the rectosigmoid junction. It appeared to be avascular, non-ulcerated, and firmer than the surrounding mucosa. The following day an abdominal operation was performed under spinal anesthesia. The postoperative course was afebrile and reasonably uneventful. He suffered intermittent chest pain and hiccoughs which persisted for several days. All sutures were removed by the fourteenth postoperative day. He was discharged on the (following) twenty-seventh hospital day.

For several months after discharge the patient lived at home, pursuing a normal, sedentary, ambulatory existence. He maintained circulatory compensation with 0.1 gram digitalis daily. After three months he noted gradually increasing dyspnea. An x-ray of the chest at that time showed marked cardiac enlargement of mitral configuration, and no pulmonary pathologic change. Finally a recurrence of peripheral edema and orthopnea occurred. The employment of various diuretics failed to alter the edema. The patient died at home after several weeks in bed.

#### *Clinical Discussion*

Dr. R. L. McMillan wrote on the patient's tenth hospital day:

This seventy year old man has shown fibrillation, râles in both lung bases, enlargement of the liver and spleen and

pitting edema of the ankles. Examination of the heart by physical and EKG means, indicates rheumatic heart disease with mitral stenosis and probably aortic regurgitation. The hard, four by three centimeter mass in the sigmoid colon is probably carcinomatous.

#### *Clinical Diagnosis*

1. Auricular fibrillation
2. Rheumatic heart disease
3. Mitral stenosis
4. Question of aortic regurgitation
5. External and internal hemorrhoids
6. Carcinoma of sigmoid colon.

#### *Pathological Discussion*

Dr. W. C. Thomas

The essential pathological features of note in this case are in the circulatory and gastro-intestinal systems. The cardiac lesion was a minimal but quite definite mitral valve scarification and retraction. The extremely large, dilated, left auricle with its thickened wall bore testimony to the chronicity and the nature of the pathological physiology. Microscopical examination of the affected areas revealed only scar tissue as one would expect in such a long-standing process. No cellular changes approaching those of earlier Aschoff lesions were found.

The pathological involvement of the colon is interesting. The specimen received by the Division of Surgical Pathology was a portion of colon with a firm mass measuring six by five by three centimeters. The surface was light grey, smooth and glistening, except in one area where the ileum was firmly attached. The lumen was markedly stenosed at the site of the mass. Microscopical sections revealed an adenocarcinoma, grade III, with infiltration through the wall to the serosal layer. At autopsy, there was a thickened area in a portion of the descending colon, but this was composed of fibrous tissue; no evidence of neoplastic process was noted.

#### *Anatomical Diagnosis*

1. Mitral valve scarring with shortening of chordae tendineae and deformity of papillary muscles—probably rheumatic in origin.
2. Left auricular dilatation and hypertrophy of the musculature of the wall.
3. Pulmonary congestion and edema.

4. Operative scar, left rectus, well healed.

5. Ileo-ileostomy, patent.

6. Colectomy, old, colon to colon anastomosis, well healed.

#### Comment

Despite advanced age and cardiac decompensation successful surgical removal of a neoplasm, causing daily discomfort, was performed. It cannot be maintained that the operation shortened or prolonged the life of the patient, but it materially added to his comfort in his remaining months. The history and physical findings

were unusually helpful in the diagnosis of the carcinoma, making stool examination and a barium enema unnecessary. The cardiovascular situation is less satisfactory both from the standpoint of history and outcome. Apparently the patient is a representative of the class of rheumatic fever patients in which arthritic and cardiac symptoms are minimal. The rheumatic process had impaired heart function, however, and life ended finally when the addition of senescent changes to rheumatic damage further reduced the cardiac output to a level below the requirements of the aging individual.

## CULTURAL MEDICINE

### SAPPINGTON'S FIGHT FOR QUININE

**K**NIGHTS in shining (or tarnished) armor appear in the Washington, D. C. arena in 1943. The battle rages over quinine as a major element among essential materials. Henry Wallace and Jesse Jones wallop and clinch, and clinch and wallop.

**O**NE hundred years ago—1843—in the Mississippi Valley, John Sappington, a country doctor endowed with the dynamic personality typical of the American pioneer, was successfully defying the sacred dogmas of the medical Sanhedrin of the day with respect to the use of quinine in malaria, from which disease the western and southern states suffered tragically; for malaria was the chief obstacle to the settlement of those regions as it still is today the curse of military and civilian life in many parts of the world, as our government (or some elements in it), in waging war, has come to understand well.

Sappington's great heresy consisted in an all-out assault, with no holds barred, upon the teaching of the chief gods in the medical Pantheon that tonics and stimulants were taboo in the treatment of fevers and inflammations of any sort. To this Sappington truculently said: "We are not only satisfied as to the curative powers of quinine, but we are dis-

posed to ascribe to it preventive virtues also." The aforesaid gods and their bemused followers were all for depletion—vomiting (tartar emetic), purging (calomel) and bleeding. Sappington pulled no punches in dealing with this hokum and handled its partisans ruthlessly. The battle was fought in a rough, primitive stage of our culture, when blood and sweat and tears accompanied every significant social struggle, and so the story must properly etch the times and the men. Sappington's dramatic methods were ethically shocking, but he was everlastingly right in his basic position and the respectable majority hopelessly wrong.

**S**APPINGTON was born in Maryland on May 15, 1776 and died September 7, 1856. He was trained for medicine by his father, who was also a physician, and at the University of Pennsylvania. He settled at "Fox Castle," near Arrow Rock, Missouri, in 1817. When quinine was isolated in 1820 and appeared upon the Philadelphia market in 1823, Sappington bought it by the pound and proceeded effectively to stay the malarial blight throughout the West and South, making the Mississippi Valley and the Louisiana Purchase fit for human habitation. This control of malaria was nothing less than a titanic contribution to civilization by

a one-man Public Health Service.

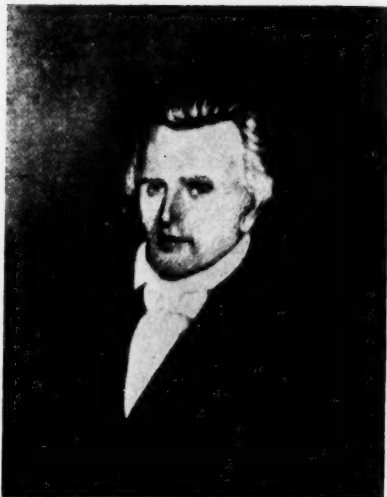
After many years of clinical experiment and tumultuous advocacy of quinine in malaria Sappington, in the evening of his life, completed in 1843 and published in 1844 his *Theory and Treatment of Fever*, "perhaps the first medical treatise written west of the Mississippi," antedating by six years Daniel Drake's famous *Diseases of the Interior Valley of North America*. The year 1944 should witness suitable recognition of Sappington's place in American medicine.

Says Thomas B. Hall: "Unable to change the erroneous opinions of his fellow practitioners and realizing the urgent need of making quinine available to people in the intensely malarious districts, he began in 1832 the wholesale distribution of Dr. John Sappington's Anti-Fever Pills."

Sappington was an entrepreneur on what was a formidable scale in his day—really foreshadowing the great manufacturing houses of this organizing era—for he employed twenty-five agents to distribute his pills, literally by the million, throughout the West and South. In his book he gives the formula for the pill—one grain of quinine, three-quarters of a grain of liquorice, and one-quarter of a grain of myrrh, with enough oil of sassafras to give an agreeable odor. One pill was given every two hours for acute attacks, and one three times a day for the prevention of an attack, until thirty grains had been taken. He considered large doses "a wanton abuse of one of the best remedial agents known to the profession." But "such is the wise and happy construction of the animal economy, that life is not necessarily the forfeit of malpractice." This conservatism is in line with Osler's teaching with respect to quinine dosage in malaria.

WE come now to a consideration of Sappington's "shocking" methods. Here we quote from his book:

"Although the author has vended pills to a large amount, and realized considerable sums of money by his sales, the people have also saved a great many dollars by using them; been relieved of much pain and suffering, and very many lives have no doubt been saved and prolonged. The author considers himself driven to this alternative, more from motives of benevolence than from those of self-inter-



JOHN SAPPINGTON

1776-1856

From a portrait by  
George Caleb Bingham  
(*Scientific Monthly*, July, 1943)

est. . . . Knowing, as he did, the prejudices that existed against the medicine, he also knew that, had he published his opinions to the world in any other way than he has done, and is now doing, neither the public nor himself would have benefited much, if any, by it. But, from the manner that has been adopted, the full benefit is now given to the world; together with a great deal of other useful matter, that could not well have found a place in a newspaper, or common handbill."

The value of quinine being imperfectly understood, Sappington "therefore prepared and sent forth to the public large quantities of my Anti-Fever Pills, and at the same time concealing their composition that they might acquire a reputation upon their own intrinsic worth."

Note the concealment of the formula. But also the motive and the benighted provocation. The formula was, of course, published in the book, after the large-scale demonstration of therapeutic efficacy that we have outlined. Nothing ever rested on a better basis of truth.

We have to add to the "shocking" methods the fact that Sappington did not hesi-



tate to use the Valley's church bells as part of his technic of salesmanship—as he would have used the radio had it then existed. The bells were actually tolled every evening to remind the people to take their pills!

We have said that Sappington handled hostile colleagues ruthlessly. In his book he describes an incident illustrating this point. In a clash with other physicians who were not doing justice to a victim of malaria he insisted upon what he knew to be the right course to pursue. The family elected to dismiss the other physicians and administer Sappington's pills, with striking results. And yet the man possessed a certain intellectual tolerance and power of detachment and could even be apologetic, as is shown by the following passage in his book:

"Far be it from us to censure any one for tenaciously adhering to the prejudices of education, however erroneous such prejudices may be; let the Jew be Jew still—let the Rushite be Rushite: for we deem it a wise provision in the economy of nature to have it thus. We only seek to apologize for the course that we, as individual laborers in the cause of humanity, have pursued." Thus there was no real contumacy of the sinister sort in the nature of this strong man. But this is not to say that there was any weakness or lack of candor about him in

debate, for he declares that "it is a serious evil in society and much to be regretted, that the ruling or dominant party in medicine, like that of bigots in religion, are always willing to wage an exterminating warfare against any theory or practice that is new, or that differs from their views of propriety, without investigating the principle upon which it is based, or knowing the result of the practice in scarcely any way whatever." We can forgive Sappington much of his bitterness and vehemence here if we consider the time, the schools of practice, and the nature of his immediate opposition on the question of quinine.

AS to his social views in general, Sappington reveals here and there in his book his understanding of the deleterious influence of castes, of chartered privilege and of governmental paternalism, and in one passage displays a flaming faith in America that makes him a forerunner of Walt Whitman himself, for his America is "this free, this new, this self-created republic," the people of which are "the true, the only legitimate sovereigns of the earth."

It would appear that the colorful showmanship of Sappington is still in the family line, for the Ginger Rogers of our stage and screen is a direct descendant.

## CANCER

*Edited by John Mumford Swan, M.D. (Pennsylvania), F.A.C.P.  
Executive Secretary of the New York State Committee of the  
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(Hopkins), F.A.C.S.*

### CANCER OF THE BREAST IV. TREATMENT

CANCER of the breast must be discovered, if possible, before metastasis has begun and then completely destroyed. This is the basic principle in treatment, stated in its simplest form. The measures available at present for accomplishing this destruction are with radical mastectomy, with x-irradiation and with radium, either singly or in combination.

The method to be employed in a given case may be discussed under the following subdivisions: 1—general considerations; 2—surgery alone; 3—surgery and irradiation; 4—irradiation alone; 5—oöphorectomy and ovarian sterilization; 6—the intravenous use of selenium; 7—the use of hormones.

#### 1. GENERAL CONSIDERATIONS:

Nicholson (42) says that every patient with cancer of the breast is entitled to some form of treatment, if only for its psychic effect. The physician should estimate the probable duration of the patient's life, whether or not ulceration is likely to occur soon, whether recurrence is likely, the radiosensitivity of the growth, and the general condition of the patient.

He classifies the patients into five groups: (1) Those for whom nothing can be done except to administer narcotics. (2) The inflammatory cases. (3) Those patients in whom the primary tumors are operable; but in whom there are definite metastases, especially in the bones or in the lungs. (4) Those patients for whom irradiation is indicated. (5) Those patients for whom palliative operations are advisable. Cutler (15) says that in cases of plasma cell mastitis and inflammatory carcinoma operation during the acute stage is contraindicated. When all signs of inflammation have disappeared and a discrete tumor persists, wide local excision should be done. In the case of a single tumor in one breast in a woman 25 years of age or older, the only safe method to adopt is to consider such a tumor as carcinoma and remove it for microscopic diagnosis.

**G**ERSHON-COHEN and Colcher (21) say that if one waits to remove a breast tumor until an early diagnosis of malignancy can be made through x-ray study or from clinical appearances the results of treatment may be improved somewhat, but not much. Every breast tumor should be removed as soon as possible after it is discovered.

Rowntree (53) says that, while there are no absolutely positive rules that can be given concerning the management of all cases of breast tumor, he has developed the following fairly definite working scheme which is quite satisfactory to him:

- 1.—All operable cases of cancer of the breast should be subjected to radical mastectomy followed by a course of prophylactic high voltage and short wave-length x-irradiation.

- 2.—In those patients who are not suitable for radical operation, on account of age or intercurrent disease, interstitial radium implantation carried out on a comprehensive scale unquestionably offers the best chance for long survival.

In those patients in whom radical sur-

gery is unsuitable, on account of the extent of the primary disease, with gross involvement of the axillary lymphnodes or of the supraclavicular lymphnodes, strictly limited operative removal followed by radium implantation in the axilla and the usual lymphatic paths is best.

In cases in which there are multiple skin nodules, *peau d'orange*, or bilateral growths, deep x-irradiation is the method of choice.

He considers early diagnosis the "most important preliminary to treatment" and that this early diagnosis is becoming daily more difficult. The patients come to the Royal Cancer Hospital of London "at a very much earlier stage than they ever have before."

**W**HITE (62a) says that the surgeon should realize the necessity for the removal of all breast tumors immediately and not after long drawn out observation.

Trout (60b) gives the following three objectives in the treatment of cancer of the breast: (1) The prevention of the occurrence of cancer, if possible. (2) The removal of the cancer from the chest wall so that the possibility of local recurrence shall be decreased if not eliminated. (3) The proper management of the patient if the growth has extended beyond the chest wall.

In relation to the prevention of the development of cancer, he advocates the use of estrin, streelin, or prolactin, hypodermically, in women with painful breasts during menstruation and the use of a properly fitting brassiere.

He is of the opinion that a patient who has been operated upon for cancer of the breast should not be subjected to the possibility of lactation.

Webb-Johnson (29) discusses the results of treatment of breast cancer with surgery, with irradiation and with both surgery and irradiation. The discussion does not lend itself to abstracting, so the student should read the section of the paper devoted to treatment in its entirety.

**A**FTER an exhaustive review of the literature (232 titles) Robillard and Shapiro (51) present the following summary of their opinions concerning cancer as a whole. We think that these conclusions are germane to the question of the treatment of breast cancer.

- 1.—The patient with cancer should, in general, be considered chronically ill. By

the usual standards a relatively poor surgical risk, he is a candidate for radical operation and therefore requires the most diligent supportive preoperative and post-operative care.

2.—That some degree of arteriosclerotic heart disease exists, is a reasonable assumption in the average patient with cancer. Relative circulatory inefficiency renders congestive heart failure, shock, thrombosis, embolism and hypostatic pneumonia major surgical risks. The routine use of electrocardiography and chest plates is, therefore, of particular value in the treatment of patients with cancer. Impaired renal and hepatic function, diminished vital capacities, obesity, diabetes, hypertension and urinary retention are likewise frequent concomitants of cancer that must never be overlooked. These require intensive corrective preoperative preparation.

3.—Among 100 unselected patients admitted to the surgical service at the Brooklyn Cancer Institute (Brooklyn, N. Y.), the total serum proteins averaged below 6.5 mg. in 55 per cent. The carbon dioxide combining power was found to be under 53 in 58 per cent. The presence of acidosis, ketosis and hypoproteinemia may, therefore, be considered presumptive in the average patient with cancer. Hypoproteinemia is an index of malnutrition. Malnutrition invariably presupposes the existence of surgical avitaminosis. Hypoproteinemia likewise predisposes to shock, edema and great impairment of wound healing.

4.—The average whole blood chloride level on admission to our service was below 450 mg. in 45 per cent of the cases. Particularly in cases of gastro-intestinal neoplasm, fluid electrolyte imbalance is a safe general assumption. Except in the presence of electrolyte loss, the routine use of dextrose-saline mixtures will often yield a daily surplus of 20 Gm. of sodium chloride, an amount possibly transcending the excretory function of the kidneys of the middle aged patients. . . .

5.—The real threat of overtaxing the circulation and precipitating pulmonary edema or congestive heart failure must be borne in mind when infusions or transfusions are administered to a middle-aged patient.

6.—The patient with cancer has a greater susceptibility to shock because of lowered serum proteins, degenerative

changes and anemia as well as the magnitude of the operative procedures. Hematocrit readings and determinations of plasma protein and specific gravity are thus particularly indicated in prevention. Prevention is of paramount importance because advanced shock is generally irreversible. Attempting to combat shock by administration of dextrose-saline solutions is to confuse the problems of shock and fluid-electrolyte balance. Prompt administration of plasma or blood is of greatest avail.

7.—Anemia is a well recognized characteristic of patients with cancer but is all too seldom corrected prior to operation. The average hemoglobin content of 65 of the 100 successive patients entering the hospital was below 65 per cent. Uncorrected anemia predisposes to shock, edema and poor wound healing and implies from the outset the handicap of relative tissue anoxia.

8.—Postoperative pulmonary complications may be expected to be more common among patients over 50, the age when initial emphysema, coronary sclerosis and chronic bronchitis are commonly seen. Anesthesia and operative procedures must not be unduly prolonged for this reason. Neglect of detailed preventive precautions in this age group may often mean the failure of an otherwise successful procedure.

9.—Immediate operation on the patient with cancer without intensive preoperative preparation and postoperative care based on the specific requirements of this group courts an often avertable disastrous end result.

**H**AAGENSEN and Stout (23) in an analysis of 1040 cases of carcinoma of the breast seen at the Presbyterian Hospital (New York City) over a twenty year period (1915 to 1934 inclusive) say:

"Among most of those who deal with carcinoma of the breast today, there has been a sobering realization that the high hopes of the curative value of radiation that were held a decade or more ago have not been fulfilled. We face the fact that we must turn back to surgical removal of the disease, try to choose our cases for radical mastectomy with more exactitude and perform the operation with more skill. In this task many factors of clinical and pathological judgment play a part, and our primary need is for more and

better data upon which to base our decisions."

Jacobs (28) is of the opinion that: "A complete, thorough, careful physical examination and all necessary laboratory examinations should be done in each and every case of cancer before any form of therapy is considered. If possible, every case should have röntgenograms made of the chest and pelvis including the lumbar spine and heads of the femora."

**II. SURGERY ALONE:** It is not easy to compare the results of treatment of breast cancer with surgery alone, with surgery and irradiation and with irradiation alone because almost all contributors consider the results of all three methods in the same paper. However, we have attempted to separate the opinions of the authors into the categories above mentioned.

Harrington (25a) is of the opinion that in every case in which there is a single localized tumor, the only safe course to be followed is the surgical removal of the tumor, followed by its microscopic examination. If that study shows a proliferative type of mastitis, such as Schimmelbusch's disease, radical mastectomy should be done.

**T**HE poorest surgical results follow secondary radical amputation after primary removal of a tumor. The best results follow primary radical amputation.

The results of radical mastectomy depend to a great extent on the thoroughness with which the operative procedure is done. Operation is not advisable if distant metastases are present (lungs, liver, skeletal system). If there is an ulcerating lesion and the mass can be removed and the skin closed, radical mastectomy should be done as a palliative measure.

Tod and Dawson (58) advise simple mastectomy in all cases in which there is doubt concerning the cancerous nature of the growth, except in cases of acute inflammatory carcinoma and pregnancy and lactation tumors. In these cases surgery should be limited to biopsy for diagnosis. The material for biopsy should be obtained by the use of the electric cautery. They are of the opinion that a two stage operation is not dangerous, provided radical mastectomy is not too long delayed.

The highest survival rates are obtained in those cases in which radical breast amputation is done early.

Dean Lewis (35) is of the opinion that there is a tendency to limit the area involved in the performance of a radical mastectomy. He thinks that the operations, as a rule, are not as complete as when first undertaken. And he says: "A radical operation should be performed, and no degree of radicality, based upon the size of the tumor, should be practiced. Operation should be resorted to in all cases, except when there is no hope of effecting a cure." He advises the removal of too much skin rather than too little. Some patients operated when there seemed to be little hope have survived long periods.

**I**N 1935 Bloodgood (6d) said: "When a breast tumor is small enough to be excised with a good margin of uninvolved breast tissue, excision is done. The tumor is immediately bisected and a frozen section is made. If the surgeon and the pathologist are confident that the tumor is distinctly benign the wound in the breast is closed and no postoperative irradiation is employed. If, on the other hand, the tumor is definitely malignant, radical mastectomy is done at once." He also said at that time that he was beginning to "accumulate evidence" that a breast cancer "smaller than a twenty-five cent piece" (24 mm.) "which has been present for one month or less . . . its local excision and postoperative irradiation may offer as many chances for permanent cure as the radical operation."

In the same year Harrington (25b) was of the opinion that primary radical amputation was the most efficient method of treatment for carcinoma of the breast.

Moran (40) says there is no justification at present for the suppression of radical mastectomy as an important part in the treatment of mammary cancer. The one contraindication to surgery is the rapidly growing, highly malignant cancer, particularly when it occurs during pregnancy or the puerperium.

Creysell and Morel (14) say that because of the fact that local recurrences and involvement of the supraclavicular and the axillary lymphnodes cause 35.0 percent of the deaths, early radical mastectomy is necessary. They "deplore" atypical operations.

**K**EYNES (32b), noted for his advocacy of the treatment of mammary carcinoma with radium, writing in 1937



says: "I am prepared to maintain that if the axillary lymphnodes are extensively involved, dissection of the axilla may be harmful, and that if they do not appear to be involved at all it is unnecessary. This opinion is coupled with the assumption that radical irradiation will be carried out in every case."

Trout (60a) says that careful and extensive surgical removal of the growth is still the most important factor in the treatment of cancer of the breast.

Neuhof (41) is of the opinion that when involved lymphnodes are found in close or immediate proximity to the axillary vein during a radical mastectomy the vein should be excised. In eleven cases in which he excised the vein there were two of "some edema of the upper arm" and two of fluctuating edema of the hand." However, he thinks the procedure does not increase the likelihood of the development of edema.

Brooks and Daniel (9) compare the results of radical mastectomy (Halstead's operation) with mamnectomy (removal of the primary tumor and a portion of the mammary gland only). They say "all of our experience has been contrary to the view that as good survival periods could have been obtained by the employment only of conservative operations." The paper is based on a study of seventy-two cases operated with the same technique.

**K**UNATH (33) after a study of ninety cases in which radical mastectomy was done, is of the opinion that that operation is not indicated when there are demonstrable metastases beyond the regional lymphnodes, demonstrable involvement of the supraclavicular lymphnodes, far advanced ulceration, fixation to the chest wall, very poor general condition of the patient, associated lesions indicating a limited life expectancy, acute carcinoma in the lactating breast and during pregnancy.

Fitzwilliams (19) makes a plea for a more local operation in really early breast carcinoma. He reported a study of ninety-three cases of early breast cancer treated with local operation, that is, the removal of the tumor. Of these patients forty-seven were living without recurrence from two years and six months to ten to fifteen years (50.5 percent), twelve were dead from intercurrent disease (12.9 percent) and eleven were dead from carcinoma (11.82 percent). However, he

says that after a local operation constant vigilance on the part of the doctor and willing cooperation on the part of the patient are necessary.

Bransfield and Castigliano (7) are of the opinion that a radical operation is the only method of excisional surgery routinely to be employed in the treatment of operable cancer of the breast.

In 1933 Friedman (20) contributed a paper on skin conservation in cases of radical mastectomy for carcinoma. In order to save skin for covering the wound he considers it safe to save a considerable area of skin from the normal side of the breast opposite to the quadrant which contains the tumor.

**C**ONCERNING this same question of skin removal White (62b) reports a study of the records of cases of cancer of the breast in which radical mastectomy was done in the Roosevelt Hospital (New York City) between January 1, 1922 and December 31, 1936. During this period there were 238 cases with plastic skin closure and seventeen with skin grafting. Of the 238 patients with plastic skin closure 137 had proved axillary metastases and forty-three had local recurrences. One hundred and one had no axillary involvement and there were only eleven local recurrences. Of the seventeen skin grafting cases fourteen had axillary metastases with five local recurrences and three had no axillary metastases, with one local recurrence. The operative method requires the removal of at least 15 cm. of skin at the narrowest diameter of the wound and more if the growth is large. The author is of the opinion that local recurrence is fairly frequent and that follow-up for many years will show an increasing percentage of the local recurrence. In the cases of local skin recurrence the failure is due to the fact that the growth was already widespread without the knowledge of the surgeon.

**T**HIS year (1943) a comprehensive review of the experience at Memorial Hospital (New York City) has been published by Adair (1c). The author says that during the past 22 years 12,751 patients were admitted to the breast department of that hospital. Of these 7,419 had malignant tumors (58 percent) and 5,332 had benign tumors or inflammatory lesions (42 percent). Of the 7,419 cases

—Concluded on page 259



## CONTEMPORARY PROGRESS

### OTOLOGY

#### *Control of Head Noises; Their Illusions of Loudness and of Timbre*

E. P. FOWLER (*Archives of Otolaryngology*, 37:391, March 1943) distinguishes two types of tinnitus—vibratory and nonvibratory. Vibratory tinnitus is caused by actual autogenous vibrations that reach the ear from any part of the body; in this type, the tinnitus is "a real sound," often audible to the examiner, and often responds to various physical manipulations. Nonvibratory tinnitus is due to "biochemical irritation" of the auditory neural mechanism, is not caused by actual sound but is an illusion, and, as such, is often exaggerated. It may be caused by various conditions within the ear, such as pathological closure of the Eustachian tube producing a partial vacuum in the middle ear and "contiguous spaces," "acoustic trauma," and otitis media and otosclerosis which disturb the function of the cochlear windows; or by cardiovascular disease, gastro-intestinal disorders (causing toxemia), allergy, drugs and poisons, and intracranial growths. All of the conditions that cause nonvibratory tinnitus produce local anoxia, i.e., lack of oxygen in the tissues, and "therefore an edema and impending degeneration of the neural elements." Since nonvibratory tinnitus is "an illusion" of sound and not a real sound, some patients tend to underestimate its loudness and the disagreeableness of its timbre, while others tend to exaggerate it. The loudness of the tinnitus may be measured by comparing it with the loudness of a similar sound applied to the opposite ear, or with some other sound similar to the tinnitus in frequency and intensity. The number of decibels over threshold required to "balance" the tinnitus shows how loud the tinnitus is; this is usually only 5 to 10 decibels, rarely over 40 decibels, even though the patient declares that

this tinnitus is very loud. The demonstration of this fact to the patient aids him in rationalizing his symptoms and in lessening the illusion of loudness. When tinnitus is produced by "autonomic nervous system episodes," the author has found the following treatment of value in controlling the tinnitus and also the loss of hearing that usually accompanies it. The patient is given two or three tablets of glyceryl trinitrate (1/100 grain) and instructed to take one immediately when he "senses the aura" or hears the tinnitus recurring or increasing in volume. Attacks of tinnitus and deafness can often be aborted in this way, and this tends to lessen the frequency and severity of such attacks. Treatment along similar lines is indicated in persons with cardiovascular disorders. If the tinnitus cannot be entirely overcome, its annoyance may be lessened by rehabilitating the patient to "a more normal mental and social status," for which hearing aids and lip reading may be of value.

#### COMMENT

*The author advocates all the local and general measures commonly used to alleviate tinnitus plus the use of glyceryl trinitrate in tinnitus due to "automatic nervous system episodes" and the use of apparently well conceived therapy addressed to psychogenic factors. It would seem that the use of glyceryl trinitrate should be under careful supervision. The psychotherapy should help many patients a great deal.* L.C.McH.

#### *Diagnosis and Treatment of Meniere's Syndrome*

MILES ATKINSON (*Archives of Otolaryngology*, 37:40, Jan. 1943) emphasizes the importance of a careful diagnostic study in Ménière's syndrome. In the first place a careful neurologic examination is necessary to determine whether or not there is a lesion of the

cerebellopontine angle that causes the symptoms. In the second place a careful otologic examination is indicated, including tests of the patency of the eustachian tubes; while others emphasize the importance of the Bárány tests, the author considers that these tests are indicated chiefly where there is evidence of neurologic complications, not as a routine in every case. Stricture of the eustachian tubes with attacks of complete obstruction, however, may be a cause of Ménière attacks, which, in such cases, can be relieved by gradual dilatation of the stricture. A general examination of the patient is also indicated with special attention to alterations in blood pressure, gall-bladder disease, and foci of infection, especially in the nose and throat. The author states, however, that in his series of cases, there was no focus of infection that required removal. In the cases of Ménière's disease in which no definite cause for the syndrome can be found, the author distinguishes two types, the allergic and the non-allergic. The allergic patients give a positive reaction to the intradermal injection of 0.0057 mg. of histamine base (0.01 mg. histamine dihydrochloride). If the reaction is definitely positive (a wheal with one or more "long trailing pseudopods"), treatment consists in desensitization by subcutaneous injections of histamine beginning with the test dose and gradually increasing, according to the patient's tolerance, repeating the maximum dose attainable (never more than 1 mg. histamine dihydrochloride) at four weekly intervals. This course of treatment may be repeated "after six months or so." Of 14 patients giving positive reactions to the histamine test treated by this method, 12 have been relieved of attacks, one continues to improve, and only one has had a relapse. In patients giving negative reactions to the histamine test, nicotinic acid has been employed in treatment, not as a vitamin but as a vasodilator. A test intramuscular dose of 25 mg. is first given, after which treatment is continued either by intravenous administration at first, followed by intramuscular injection, or by intramuscular injection in gradually increasing doses; nicotinic acid is also given by mouth, and eventually injections are given less frequently and finally discontinued, and oral administration alone is continued. The dosage varies with the response of the patient to this treatment, but the

author has found "a fair average" for the maximum dose is 50 mg. by intramuscular injection and 50 to 100 mg. by mouth. Of 49 patients treated with nicotinic acid, 20 have been relieved of attacks; 25 have shown definite improvement and some of these may be completely relieved under further treatment; only 4 have failed to show any improvement.

#### COMMENT

*In our own experience the use of restricted fluids, low sodium diet and administration of ammonium chloride has been efficacious where a definite local condition or an allergic condition has not been found to be responsible. It may be found that nicotinic acid is an improvement upon this type of therapy. We believe that there is still a considerable difference of opinion among allergists as to the usefulness of histamine desensitization.*  
L.C.McH.

#### *Radium Therapy as an Aid in the Control of Chronic Otorrhea*

E. B. EMERSON and A. H. DOWDY (*American Journal of Roentgenology*, 49: 234, Feb. 1943) report the treatment of chronic otorrhea by radium application to hypertrophied lymphoid tissue around the orifice of the eustachian tube. The cases in which this treatment was employed were those in which the otorrhea was accompanied by such hypertrophied lymphoid tissue and in which there was no concomitant middle ear or active mastoid disease. The minimum amount of radium employed was 25 milligrams (in two 12.5 mg. needles), in a special applicator with an oval window, so that when it is introduced into its "treatment position" against the os of the eustachian tube, the radium is not filtered except by "the filter supplied by the walls of the needles." A single treatment is given with approximately a third of the erythema dose (5 mg.-hour). This dosage requires a twelve minute application to each eustachian tube or twenty-four minutes if both orifices are treated with one applicator containing 25 mg. radium; if two applicators, each containing 25 mg. are employed, both orifices may be treated simultaneously in twelve minutes. In most of the cases treated, a single treatment of 5 mg.-hr. was sufficient; occasionally a second treatment was given three months later. Of the 30 cases treated, 5 showed a recurrence of otorrhea; 2 of these recurrences followed swimming and subsided without further

treatment; in 2 cases a second radium treatment cured the recurrence; in one the middle ear remained moist, although "frank otorrhea" subsided. In 3 cases a dry ear was not obtained, although in 2 of these the discharge was lessened. In 4 of the 30 cases the ear drum healed completely, although in 2 of these cases the otorrhea was of ten years and more duration. The authors point out that if tympanic perforation persists, recurrence of otorrhea may result from infection from without, or from extension of an infectious process from the nasopharynx.

#### COMMENT

*This would seem to be a very useful form of therapy in patients with persistent otorrhea due to excessive lymphoid tissue in and about the orifices of the eustachian tubes.*

L.C.McH.

#### Aero-Otitis Media and Aero-Sinusitis

LEWIS CHESTER and J. C. DROOKER (*Laryngoscope*, 53:203, March 1943) note that aero-sinusitis is not very common among Army flyers, although ear symptoms due to changes in atmospheric pressure are "the commonest complaints that occur in aviation." This is probably due to the fact that pathological conditions in the sinuses are more easily detected on physical examination than changes in the Eustachian tubes. Aero-

otitis in aviators is due to the changes in atmospheric pressure that take place in ascent and descent; in ascent the atmospheric pressure is increased, in descent decreased, the latter creating a negative pressure in the tympanic cavity. The greatest hazard to the ear is rapid descent such as is necessary especially in military flying. The negative pressure in the tympanic cavity causes pain in the ear, and if it exceeds 100 mm., the tympanic membrane may perforate. If such negative pressures are maintained for any length of time, there are definite pathological changes in the tympanic membrane and middle ear cavity. Treatment usually consists in shrinking of the nasal mucosa and the "gentle" use of the Eustachian catheter. The authors consider cocaine 4 per cent and neosynephrin  $\frac{1}{4}$  of 1 per cent to be the shrinking agents of choice. Occasionally it may be necessary to do a paracentesis if the middle ear contains blood or serum that does not escape through the Eustachian tube. Suppurative otitis media may complicate aero-otitis media, but in their experience at Bradley Field (Conn.), the authors have seen only one such case.

#### COMMENT

*An intelligent discussion of a very timely subject.*

L.C.McH.

## PHYSICAL THERAPY

### Muscle Rehabilitation by Active Motion

H. KRAUS (*Archives of Physical Therapy*, 24:151, March 1943) notes that in the use of active motion for muscle rehabilitation after injury, the type and amount of active motion must be carefully prescribed and graded in order to obtain the best results. Active motion should be begun as soon as it can be employed without "jeopardizing normal anatomy" (as in fractures requiring fixation) or causing pain. The exercises are designed to develop muscle "power" or strength, muscle tone and elasticity and finally coordina-

tion, without causing irritation of the muscle and spasm. Guided movement is indicated when there is a limited range of motion of a joint and limitation in all the "qualities" of its muscles. Exercises that develop muscle power are those that require lifting a weight or overcoming resistance; the weight may be represented by the weight or partial weight of the region of the body moved by muscle. If the muscle cannot "manage" the full weight of the body region, and its synergists cannot give adequate aid, assistance must be given at first by another person, by exercises under water, or by the hands of the patient himself. Resistance exercises may be carried out with the aid of

another person or with mechanical devices. Exercises must be carried out regularly with gradual increase in the weight lifted or the resistance overcome. Exercises to develop tone—which require tightening of the muscle—must be omitted if there is limitation of motion due to muscle spasm. To develop muscle elasticity, stretching and relaxing exercises are indicated, but the exercises employed must be such that stretching of a shortened spastic muscle is done by its antagonist. The qualities of muscle power, tone and elasticity must be developed before coordination exercises are possible.

#### COMMENT

*That patient recovers most quickly from injury who begins active exercise most quickly. In the case of fractures no other type than active exercise should be employed in treating the injured member, when this is undertaken, since the patient is less likely to overdo or hurt himself. This does not preclude starting exercise directly the first stage of shock, disturbance or fear is over.*

*In the case of the bedfast patient, posture should be the first consideration. A multiplicity of pillows, into which the patient sinks, will soon make for general disability and lack of co-operation. All too many patients soon accept the role of invalidism unless shaken from their lethargy and induced to do for themselves. For these, general movements as turning, twisting, lifting other members, with respiratory exercises frequently interspersed, will prevent, especially in the old, weakness, exhaustion and the threatend hypostatic congestion that may be terminal.*

*For the injured upper or lower extremity in the hospital, of course, mechanical devices to raise and lower the limb are of great help, especially the pulleys whereby the patient pulls himself up or lowers himself with the*

*good arm and thus keeps up the tone of all the muscles of the upper trunk. The more active the patient, generally, the sooner will he be out of bed and on the road to his job. While assistive and resistive exercises are excellent as discussed by Dr. Kraus, the purposeful, frequently done, ordinary, active exercises needed to keep him going in his environment, at any particular stage, are what will make for most rapid recovery, if begun early enough. Hence the success of early physical therapy, early occupational therapy, early work therapy.*

M.C.L.McG.

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#### A New Aspect of Muscle Reinnervation

H. E. BILLIG, JR. and A. van HARREVELD (United States Naval Medical Bulletin, 41:410, March 1943) report a study of a new method of functional improvement of parietic muscle, based on the principle of the "reinnervation of muscle fibers by means of increased nerve fiber branching during regeneration after interruption." In the first cases treated the motor nerve branches involved were exposed surgically and crushed with a fine forceps

as close as practicable to the parietic muscles. Four cases in which this method was used are described; in all these there was a definite increase in muscle power. Since these 4 cases were operated on, 102 more cases have been added to the surgical series, with an average of three separate nerve muscle group operations per case; in the great majority of the cases in which there has been time "for the regenerating nerve fibers to reach the muscle fibers," there has been appreciable progressive increase in muscle power. In a second series of cases, "manual methods" with-

out the use of surgical incision have been employed to produce "the axon interruption." This has been done by vigorously "kneading" the muscles with a smooth blunt instrument, especially the area of entry of the motor axons into the muscle. The smooth round end of a mallet handle has been employed, using the head of the mallet as a grip. In the first patient treated this procedure was carried out on the femoral nerve branches and the muscle supplied by them on one side. This patient showed marked paresis of both legs after an attack of poliomyelitis when a child, and had noted no improvement in muscle force for five years. Nine months after the treatment the muscle power of the muscles supplied by the femoral nerve on the treated side had definitely increased; none of the other paretic muscle groups had shown any improvement, although other forms of physical therapy had been used for all the muscle groups. In "about 50 cases," the gluteal muscles have been treated by this method of manual pressure applied particularly over the region of entry of the motor nerves. Early progressive increase of muscle power has been noted in "nearly all" these cases, and in many this increase in muscle power has been sufficient to restore functional usefulness. This treatment has proved effective in cases where the muscular paresis is not due to poliomyelitis, as well as in poliomyelitis cases, especially in cases of traumatic injury with partial nerve root avulsions. The authors suggest that the improvement noted in cases of paresis treated by a variety of other methods may be due to the fact that the method employed involved trauma that caused motor axon interruptions with resultant increased muscle reinnervation during regeneration.

#### COMMENT

A ray of hope appears for the chronic cases of poliomyelitis after years of apparent hopelessness. More than 100 patients seemingly at a standstill as far as all therapy was concerned have recovered from their paralysis after surgical intervention. Also a new group of 50 cases, including some whose paresis was not due to poliomyelitis but rather to injury with partial nerve root avulsions, are recovering following the "manual method" described. The first case treated, crippled son of a well-known woman physician on the West Coast, has joined the Navy, whose standards of physical fitness are certainly rather high. Other

cases known of are progressing favorably.  
M.C.L.McG.

#### The Use of Diathermy in the Treatment of Fractures

M. G. SCHMITT (*Physiotherapy Review*, 23:62, March-April, 1943) reports the use of short-wave diathermy in the treatment of fractures; this treatment is not begun until at least twenty-four hours after the fracture has occurred; it may be used, however, as a preliminary to surgery or manipulation as well as during the period of actual healing. For the best results in the treatment of fractures, treatments must be frequent and prolonged; "an aggregate" of several hours of diathermy per day is necessary. In some instances the author has given twenty minute treatments every hour (twenty-four hours per day) for twenty consecutive days. There are certain obstacles to the application of diathermy in fractures depending on the nature of the fracture and the type of immobilization employed. An extremity enclosed in a circular cast should not be treated because there is no opportunity for evaporation of the perspiration. The iron rods of a splint may preclude direct application of diathermy to the extremity, but indirect application to the lower part of the trunk effects a reflex vascular dilatation and hyperemia in the legs. Such indirect application may also be advisable with surgical fixation of the fracture by metal plates, screws or pins. In cases with adhesive traction straps and moulded splints that are kept in place during treatment, direct application may be used if the intensity is kept low. The author has never seen any detrimental effect of diathermy on osteogenesis, as shown by x-ray studies, and in some cases the effect has been definitely favorable.

#### COMMENT

The use of heat in the treatment of fractures has long been advised by physical therapy physicians, to prevent organization of inflammatory products in injured soft parts by speeding up circulation, thereby helping to relax muscles, relieve pain and spasm and accelerate repair. Superficial gentle heating by the ordinary radiant lights or infrared generators is usually sufficient but work done by a number of investigators using long wave and, more lately, short wave diathermy, longitudinally, through a limb or indirectly through the pelvis or trunk has given no ill effects.

MEDICAL TIMES, AUGUST, 1943



Voshell of Baltimore was a pioneer in this work on dogs years ago, and later experiments by others have confirmed his observations. In delayed union or non-union of fractures, diathermy has given excellent results. The precautions set forth in Dr. Schmitt's paper must be strictly followed to avoid burns or untoward results. M.C.L.McG.

### **The Action of Radiant-Heat Cradles**

G. M. BROWN, D. S. EVANS and K. MENDELSSOHN (*British Medical Journal*, 1:66, Jan. 16, 1943) report a modification of the heat cradle issued by the Ministry of Home Security. The cradle, as originally issued, consists of a sheet of polished metal bent in the shape of a horseshoe and equipped with 12 carbon filament bulbs of 230 volts and 16 c.p. (about 65 watts). The patient when placed inside this cradle is covered with a blanket, and another blanket draped over the cradle to retain the heat. The authors' modification consists in shielding the bulbs and blackening the reflector, which results in conversion of the short-wave infra-red rays into long-wave infrared rays. With this cradle, the patient's temperature can be raised to the desired degree more rapidly without the risk of burns; the patient is not covered with a blanket in this type of cradle, but the region of the groin is covered with a folded towel, as it has been observed that irritation and erythema of the skin de-

velop in this region at much lower temperatures than anywhere else on the body. With this cradle, since the danger of burns is almost entirely eliminated, more careful supervision of the treatment is necessary, to avoid overheating the patient. In the use of this cradle, the patient is placed in it so that the upper end of the cradle is at the lower end of the sternum; all twelve light bulbs are turned on at first, but after thirty minutes, the number of bulbs in use is reduced so as to maintain the air temperature at the desired level. The oral temperature of the patient is taken every fifteen minutes.

#### **COMMENT**

*The radiant heat cradle in various forms for the induction of hyperthermia was in use in the U. S. A. before our fever-cabinets were brought to their present state of perfection. The authors' modification has excellent points, among them quick rise of temperature without burns. Covering the patient with a light blanket to absorb perspiration and to retain humidity has been found the safest method by Stafford Warren of Rochester, N. Y. and his co-workers and those of us who still use the "fever-box" for whatever degree of heat is desired. A restless patient may still manage to get burned if he rests an uncovered part against heated metal and this may have serious consequences at worst, unpleasant at best, as these burns are long in healing and the patient seems always conscious of them. Our constant recording rectal thermometer helps greatly to keep us on the alert—otherwise five-minute rectal temperatures are taken lest a too sudden rise take place.* M.C.L.McG.

## **PUBLIC HEALTH, INDUSTRIAL MEDICINE AND SOCIAL HYGIENE**

### **The Tuberculin Test in Tuberculosis Control**

L. L. COLLINS (*Journal-Lancet*, 63: 90, April 1943) reports that two counties in Illinois (De Kalb and La Salle counties) began a program for tuberculosis control in 1937 and 1938 respectively; by 1942 the death rate from tuberculosis had been greatly reduced in both counties. Previous to the introduction of this program "minimal tuberculosis" had not been recognized in either of these counties. The success of this program in both counties

is to be attributed largely, in the author's opinion, to the use of the tuberculin test, followed by x-ray study of the chest of those who gave a positive reaction. Tuberculin-testing surveys have been made, and many physicians use the tuberculin test for their private patients. Many cases of pulmonary tuberculosis have been detected in this way, in which the disease was unsuspected; a study of contacts and sources of infection has been made in such cases. Many persons who do not react to tuberculin on the first test have the test repeated each year; occa-

sionally such persons develop a positive reaction at some later test, at which time the x-ray film will show a minimal lesion; the source of infection can often be determined in these cases. Most of the positive reactors who show no x-ray evidence of a pulmonary lesion on the first examination continue to have an annual x-ray check-up of the chest; several cases of active tuberculosis have been discovered in this group. On the basis of his experience, the author is of the opinion that x-ray surveys without preliminary tuberculin testing result in incorrect diagnosis of pulmonary tuberculosis in some cases, with detriment to the tuberculosis control program. This is avoided under the plan of x-ray examination of only those persons reacting positively to tuberculin.

#### COMMENT

*The success of a program for tuberculosis control depends on the extent to which surveys are carried out. Emphasis should be placed upon selected groups, namely, males of 25-59 years and females of 20-49 years. Adolescents should be tuberculin tested and all positive reactors x-rayed. For completion of the case finding program, their familial adult contacts should also be x-rayed. In those individuals past adolescence, a positive tuberculin test is of significance only when a recent tuberculin test is known. Time, effort and money can be most productive when expended in x-raying post-adolescent groups of men and women in educational and industrial fields as well as in other community activities. The finding of previously undiagnosed tuberculosis cases among Selective Service registrants has demonstrated the value of mass surveys.*

E.G.B.

#### *A State Syphilis Consultation Program for Private Practitioners*

M. M. KROLL (*American Journal of Syphilis, Gonorrhea and Venereal Diseases*, 27:63, Jan. 1943) notes that four states, California, Connecticut, New York and West Virginia have organized a syphilis consultation service for physicians with full-time consultants. In New York, consultants have been assigned to various administrative units covering several of the State health districts. District health officers, coming in contact with the general practitioners of the district, refer questions arising in regard to the diagnosis and treatment of syphilis to the consultant for the district. The author has served as consultant for "an admin-

istrative unit" covering five health districts, comprising eleven counties with a population of 776,262. In the five health districts the gross annual incidence of newly reported cases of syphilis (five-year average 1936-1940) varied from 145 per 100,000 to 346 per 100,000 population. From February 1940 to May 1941, the consultant spent 273 "field days" in visiting physicians; the remainder of the time was devoted chiefly to the supervision of syphilis clinics in the area. On beginning the consultant's work letters were sent to 826 physicians in the five health districts; 105, or 12.7 per cent, expressed a desire for consultation; in many of the cases considered in such consultations, supplemental diagnostic procedures were carried out, such as lumbar puncture and dark-field examination. In addition 334 physicians, most of whom, according to health department records, were listed as diagnosing or treating cases of syphilis, were visited without invitation. Of this group, 218, or 65.3 per cent, had "various questions or patients they wished to discuss." The problems most frequently presented by physicians to the consultant related to latent syphilis, drugs and neurosyphilis; questions on early syphilis, congenital syphilis, serologic interpretations, infectiousness, pregnancy, and cardiovascular syphilis, in the order named, were next in frequency. The value of this consultation service in bringing the best methods of diagnosis and treatment of syphilis to the attention of the general practitioner has been very evident in the course of this work.

#### COMMENT

*Subject to approval of the county medical society the value of a full-time syphilis consultant is unquestioned. The average physician needs and welcomes his weighty advice.*

E.G.B.

#### *Age and Sex as Factors in the Development of the Typhoid Carrier State*

W. R. AMES and M. ROBINS (*American Journal of Public Health*, 33:221, March 1943) in a follow-up study of 3,130 cases of typhoid fever, found that 90, or 2.9 per cent of this group, became typhoid carriers. It was also found that both age and sex influenced the development of the carrier state. Typhoid patients over thirty years of age became chronic car-

riers nine times more frequently than those under thirty. The incidence of the carrier state was 2.1 per cent for all males and 3.8 per cent for all females. Approximately 16 per cent of females who had typhoid fever between the ages of forty and forty-nine years became typhoid carriers. The rate of "bacteriological cure" of carriers varied inversely with age. A statistical study by "a modified life table method" applied to "the typhoid experience" of New York State exclusive of New York City showed the estimated carrier prevalence on January 1, 1940, to be 2,500 carriers under eighty years of age; 419 carriers, or 17 per cent of this number, were under supervision at that time. Only 14 per cent of the typhoid carriers over fifty years of age were under supervision, but 28 per cent of those under fifty years were registered. As 61 per cent of the estimated number of carriers were sixty years of age and over, a large number may be expected to die annually so that there will be a rapid decline in carrier prevalence, especially in the older group not under supervision.

#### COMMENT

*The authors sound an optimistic note in concluding that the majority of undiscovered chronic typhoid carriers are in the older age group and are rapidly disappearing. However, active vigilance should still be continued in searching out the source of every case of typhoid fever.*

E.G.B.

#### Acute Hemolytic Anemia in Fertilizer Workers

R. WILSON and G. H. MANGUN (*Southern Medical Journal*, 36:212, March 1943) report 3 cases of acute hemolytic

anemia occurring among workers in a fertilizer plant using fish-scrap as a source of ammonia nitrogen. An active hemolysin was isolated from the blood of one of these workers and from the urine of another. Metallic poisoning is the usual cause of acute hemolytic anemia in industry, and a study of the conditions under which the fish-scrap is handled showed that the scrap is dumped into the hold of the fishing schooner and lightly sprinkled with sulphuric acid, and the hold tightly closed. When the schooner arrives at the fertilizer mill, no effort is made to ventilate the hold except by opening the hatches, and some of the workers—usually the most unskilled—are sent far down into the hold where the ventilation is poorest. Arsenic is present in fish-scrap and is a frequent contaminant of commercial sulphuric acid; under the atmospheric conditions in the closed hold of the schooner, arsine would undoubtedly be generated, and with imperfect ventilation, workers in the deeper parts of the hold would undoubtedly be exposed to sufficient amounts of arsine gas to cause the hemolytic syndrome observed in the 3 cases reported, one of which was fatal. Adequate ventilation of ships carrying fish-scrap, the authors state, "would prevent the recurrence of this industrial accident."

#### COMMENT

*This describes a highly specialized industrial hazard for which again atmospheric dilution is the remedial method. The detection of the hazard represents good industrial hygiene service and points to the increasing need for such service as a routine function of government.*

E. G. B.

## OPHTHALMOLOGY

#### Treatment for Herpetic and Dendritic Ulcers

F. O. SCHWARTZ (*American Journal of Ophthalmology*, 26:394, April 1943) reports 12 cases of herpetic or dendritic ulcers of the cornea in all of which foci of infection were found in the sinuses, tonsils or teeth. Local treatment with anesthetics, antiseptics (optochin or protargol) and atropine failed to clear up

the ulceration of the cornea; in 5 of the patients the use of the thermophore did not result in so much improvement as would be expected (although the author considers this instrument of definite value). In all these cases, complete eradication of the foci of infection resulted in healing of the corneal ulcer without recurrence; the only patient who still shows a very small ulcer has not had all the foci of infection treated; in all the others

healing is complete; the period necessary for complete healing was much shorter in ulcers of the herpetic type than in those of the dendritic type. The author's conclusion is that "an unidentified virus which may have its origin in infections in the teeth, nose, and throat or tonsils, should be considered as an etiological factor in the production of herpetic and dendritic keratitis."

#### COMMENT

*Herpes is caused by a virus that can be carried from individual to individual. Sinus infections, pregnancy and grippé precipitate the attacks. 95 per cent carbolic acid applied locally to the epithelium at the margin of the ulcer, and adjoining it, is most satisfactory in controlling the disease. After the ulcer is healed, the cornea is insensitive and not able to withstand exposure to the air. It must be protected by keeping the eye closed and covered until some signs of returning sensitivity occur. The eye may then be opened under "moist chamber spectacles" or with an expansion shield to prevent reinfection or recurrence of the ulcer. A patient with herpetic lesions of the cornea must always be ready to protect the eye as it never regains the normal vitality.*

R.I.L.

#### *The Effect of Mydriatics Upon the Intra-ocular Pressure in So-Called Primary Wide-Angle Glaucoma*

P. C. KRONFELD, H. I. McGARRY and H. E. SMITH (*American Journal of Ophthalmology*, 26:245, March 1943) report a study of the effect of certain mydriatics on the intra-ocular pressure in 15 cases of primary wide-angle glaucoma. Tonometric readings were made during control periods and under the influence of two instillations, ten minutes apart, of the following mydriatics: 5 per cent homatropine hydrobromide, 2 per cent parendrine hydrobromide, and 5 per cent homatropine hydrobromide in 2 per cent parendrine hydrobromide. The increase in intra-ocular pressure observed under the influence of these various mydriatics was slight, and "of no practical importance"; but such increase did occur and was greatest with homatropine plus parendrine and least with parendrine alone. Since parendrine also had the strongest mydriatic effect, it would seem to be "the ideal mydriatic" for use in cases of wide-angle glaucoma.

#### *The pH and Toxicity of Ophthalmic Solutions*

N. C. ELVIN (*Archives of Ophthalmology*, 29:273, Feb. 1943) points out that both the pH and the tonicity of a solution that is to be used in the eye affect both the rate and amount of absorption of the drug and its therapeutic action. The lacrimal fluid is alkaline with a pH of 7.4 and is isotonic with a 1.4 per cent solution of sodium chloride. The closer the solution of the drug applied to the eye approximates this pH and tonicity, the less will be the irritation, discomfort and lacrimation. The "range of comfort" for the pH is from 6.5 to 7.8. The Gifford standard acid buffer solution and standard alkaline solution may be employed to obtain the desired pH for solutions of any of the drugs used for local application to the eye. A method of determining the desired pH and tonicity of any solution is described and a table presented. Colorimetric methods may also be used to determine the pH of a small amount of any given solution quickly.

#### *Effects Other Than Anti-Infectious of Sulfonamide Compounds on the Eye*

M. E. ALVARO (*Archives of Ophthalmology*, 29:615, April 1943) finds from a review of literature and his own experience that sulfonamide compounds, whether given by mouth or parenterally, or applied locally, may produce various toxic effects, including palpebral edema, conjunctivitis, edema and hemorrhages of the retina, transient myopia and changes in accommodation and heterophorias. In the author's experience, transient myopia and changes in accommodation have been the most frequently observed in patients treated with the sulfonamides, especially sulfanilamide. He has observed 36 cases of transient myopia occurring in patients under sulfonamide treatment; and has also noted reduced accommodation almost constantly in patients treated with sulfonamides. Of the 36 patients with transient myopia, only 8 had used the drug for some time, discontinued it, and then resumed treatment; 36.36 per cent of the patients developed transient myopia after taking less than 2 gm. of the drug in less than twenty-four hours; but about 40 per cent developed myopia only after the tenth day of treatment and 36 per cent after taking more than 10 gm. of the

drug. The degree of transient myopia observed increased with an increase in the total dosage of the drug and the length of treatment. Sulfanilamide and sulfapyridine are the only two sulfonamides that cause transient myopia, according to the author's observation, sulfanilamide more frequently than sulfapyridine. Others report that sulfathiazole may cause conjunctivitis or retinal hemorrhages, but it has not been mentioned as a cause of transient myopia. Sulfanilamide penetrates the tissues of the eye more readily than any of the other sulfonamides, this probably being the reason for the more frequent occurrence of toxic effects in the eye with this drug.

### Proptosis as a Diagnostic Problem

R. I. LLOYD (*West Virginia Medical Journal*, 39:69, March 1943) discusses the various causes of proptosis in infants and children, and the importance of this symptom in diagnosis. In the newborn infant progressive bilateral proptosis coming on soon after birth suggests hemorrhagic disease with formation of blood clot beneath the periosteum of the orbital roof pushing the eye forward. Other causes of proptosis that may be evident at birth are nasofrontal meningocele, meningocele of the optic nerve and neurofibromatosis. In older infants that are artificially fed, an

acute proptosis involving one or both eyes should be considered to be due to scurvy until proven otherwise; if scurvy is the cause the condition is cured in a few days by the administration of adequate amounts of orange juice. In older children, the sudden appearances of proptosis, followed by enlargement in the temporal fossa, suggests a diagnosis of chloroma; this diagnosis can be confirmed by examination of the blood; this condition is fortunately rare. An acute proptosis associated with orbital inflammation and pain is usually due to an infection invading the orbit from the ethmoid cells; early opening of the abscess in the orbit in these cases is necessary, but permanent cure can be obtained only by clearing up the sinus infection. A slow painless form of proptosis may result from defective drainage of the frontal and ethmoid sinuses with retention of mucus that gradually displaces the lower bony wall of the frontal sinus, pushing the eye outward and forward; in such cases also, establishment of adequate drainage of the sinuses is necessary for cure. Various osseous dysmorphies involving the skull, xanthomatosis and meningioma and metastatic tumors invading the orbit may also cause proptosis in older children; these conditions can often be diagnosed by the x-ray; operative removal of meningioma is possible.



### CANCER

—Concluded from page 249

of cancer 3,535 were considered to be operable. Of these 194 were treated with surgery alone.

In cases in which the axillary lymph-nodes were not involved the 5-year survivals amounted to 74.2 percent. On the other hand, in cases in which there were axillary metastases the 5-year survivals were reduced to 47.3 percent. The author is of the opinion that this percentage of survival, which is higher than usually reported, is probably due to the fact that patients with breast cancer come to the surgeon earlier than they used to and that modern irradiation by the divided dose method has definitely increased the 5-year survivals.

In 1932 Adair (1a) recommended chordeotomy for the relief of pain in cases

of metastatic involvement of the brachial plexus.

OTHER papers concerning technical questions have been published by Pierre Duval and Henri Redon (17), Walter O. Bullock (11) and M. Fiolle (18).

It will be noted that the authors of these papers, on the whole, are advocates of radical mastectomy if there are no metastases or other complications. In reading their various opinions one is impressed with the fact that no hard and fast rules can be made which are applicable to all cases. Every patient is an individual problem and the decision concerning the method of treatment is the responsibility of the physician in attendance, preferably after consultation with one of his colleagues. All of us who are working on the cancer problem from whatever angle should become familiar with the details of the opinions of these writers.

—To be continued



# Medical BOOK NEWS

Edited by

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All books for review and communications concerning Book News should be addressed to the Editor of this department, 1313 Bedford Avenue, Brooklyn, N. Y.



AUSTIN FLINT  
1812 — 1886

## Classical Quotations

● An elevation of pitch always accompanies diminution of resonance in consequence of pulmonary consolidation. In other words, dullness of resonance is never present without the pitch being raised.

Austin Flint

On Variations of Pitch in Percussion and Respiratory Sounds, and their Application to Physical Diagnosis. *Transactions American Medical Association* 5:75-123, 1852.

## Magnuson on Fractures

*Fractures.* By Paul B. Magnuson, M.D. Fourth edition. Philadelphia, J. B. Lippincott Company, [c. 1942]. 511 pages, illustrated. 8vo. Cloth, \$5.50.

THE fourth revised edition of "Fractures" by Paul B. Magnuson has been enlarged to include first-aid, transportation and early treatment of compound fractures.

The material is presented in a clear, concise and straightforward manner. Stress is laid on the anatomical and physiological approach to the fracture problem. The illustrations are excellent.

CARMELO C. VITALE

## Handy Review for the General Practitioner

*A Review of Medicine.* By Benjamin Boshes, M.D. 5th Edition, Revised. Chicago, Northwestern University Press, [c. 1942]. 712 pages. 4 to. Cloth, \$9.50.

THIS large volume is a glorified quiz-compend, devoting itself to a detailed summary of the highlights of etiology, pathology, diagnosis, differential diagnosis,

and treatment of the various subjects taught by members of the faculty of Northwestern University Medical School.

The coverage includes general and special medicine, general and special surgery, obstetrics, gynecology, genito-urinary surgery, orthopedic surgery, fractures, pediatrics, oto-laryngology, ophthalmology, neurology, and dermatology.

Among its advantages are an excellent index, large type, and judicious use of capitals, so that it makes a handy book for rapid orientation by the general practitioner.

MEYER A. RABINOWITZ

## Orthopedic Manual

*Orthopedic Subjects.* Prepared and edited by the Subcommittee on Orthopedic Surgery of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. Philadelphia, W. B. Saunders Company, [c. 1942]. 306 pages, illustrated. 8vo. Cloth.

THE subjects covered in this book—united fractures, injuries of the spinal column, compound fractures, and osteomyelitis—are thoroughly discussed as to treatment. The chapters on ununited fractures and osteomyelitis are especially well done.

The surgical treatment of grafting and firm fixation of the graft in ununited fractures is amply discussed. In non-union of the neck of the femur all types of reconstruction operations are explained. The method of applying a Minerva jacket to fractures of the upper thoracic vertebrae is recommended.

This book provides a handy, quick review for any surgeon handling these conditions.

OTHO C. HUDSON

## Glaister's Legal Medicine

*Medical Jurisprudence and Toxicology.* By John Glaister, M.D. 7th Edition. Baltimore, The Williams & Wilkins Company, [c. 1942]. 671 pages, illustrated. 8vo. Cloth, \$8.00.

THE seventh edition of this excellent book improves its usefulness by the painstaking inclusion of chapters on bites,

blood, bloodstains, finger-prints, jurisprudence of death, poisoning by gas in warfare, and a complete revision of the section on toxicology.

The author has recast the chapter on medical jurisprudence recommended by the General Medical Council as having an important bearing on the law of evidence.

This volume has been brought up to date, citing procedure resorted to by Great Britain in relation to death by air raids, sufficient to meet the needs of the medical profession, particularly those in the armed forces.

This revision is an invaluable contribution for students and teachers of forensic medicine.

S. INGRAM HYRKIN

### Biochemical Research

*The Dynamic State of Body Constituents.* By Rudolf Schoenheimer, M.D. Cambridge, Harvard University Press, [c. 1942]. 78 pages. 8vo. Cloth, \$1.75.

THESE lectures deal with the results and interpretations of experiments carried out by the late Dr. Schoenheimer and his co-workers on the intermediate metabolism of lipids, amino acids, and excretion products in the animal body. By a number of ingenious chemical and physical devices many of the older concepts in physiological chemistry have been confirmed and a few new ones introduced.

It is hoped that the brilliant work of Dr. Schoenheimer will be extended and validated in other laboratories.

ARTHUR SHAPIRO

### Neuro-Anatomy

*The Anatomy of the Nervous System.* By Stephen W. Ranson, M.D. Seventh Edition. Philadelphia, W. B. Saunders Company [c. 1943]. 520 pages, illustrated. 8vo. Cloth, \$6.50.

THE latest edition maintains the same high standard of the former issues. The book is practically the same, but many new illustrations enhance its value. A slightly different arrangement of the material adds to the cohesiveness of the chapters. The chapter on the sympathetic nervous system has been re-written, and the subject of the thalamic nuclei has been revised and enlarged to take into consideration the investigations of Walker and others.

The present revision was completed before the recent death of Dr. Ranson. The book has long been considered a standard

textbook of neuro-anatomy, and this present edition is no exception. Clinicians who are not acquainted with the book are urged to make it part of their library.

J. L. ABRAMSON

### Health Statistical Technique

*Public Health Statistics.* By Marguerite F. Hall, M.A. New York, Paul B. Hoeber, Inc., [c. 1942]. 408 pages, 8vo. Cloth, \$5.50.

THE author states that this book is intended for use as a text for a basic course in this subject, and as reference material in health departments. For these purposes it is admirable, as the author has the ability to present material involving mathematical calculations in a manner which is not too technical.

It is too detailed, however, for the average practicing physician who should know at least the principles underlying health statistics which concern community control of disease. But such data must be presented in a more elementary way.

ALFRED E. SHIPLEY

### The War and Medicine

*Miracles of Military Medicine.* By Albert Q. Maisel. New York, Duell, Sloan & Pearce, Inc. [c. 1943]. 373 pages. 8vo. Cloth, \$2.75.

THIS book, well written in narrative style, should appeal not only to the layman for its general and medical interest, but to the general practitioner and specialist as well. Technicalities are so few and so well explained that anyone should comprehend them without difficulty. It is obvious that the author has taken considerable pains to get his facts together and has brought them up to date. It is well worth reading and passing on to a friend.

NELSON MILES HOLDEN

### Todd and Sanford's Latest Revision

*Clinical Diagnosis by Laboratory Methods.* By James C. Todd, M.D., and Arthur H. Sanford, M.D. 10th Edition. Philadelphia, W. B. Saunders Company, [c. 1943]. 911 pages, illustrated. 8vo. Cloth, \$6.00.

THIS laboratory text has been brought completely up to date. Many recent tests have been included and attention has been paid to virus and rickettsial diseases. Liver function tests have been brought up to date and adequate attention given to methods for culturing anaerobic organisms. Under clinical and enzyme chemistry additional methods are outlined, and in serology the Mazzini test is now given a place.

The reviewer regrets that greater attention has not been given to mycological diseases. Noteworthy features are the large number of new illustrations and the references to current literature.

THEODORE J. CURPHEY

### War Time Hygiene

*Supplement to a College Textbook of Hygiene.* By Dean Franklin Smiley, M.D. and Adrian Gordon Gould, M.D. New York, The Macmillan Company, [c. 1942]. 86 pages, illustrated. 8vo. Paper, \$1.00.

THE authors are well known for their books on hygiene for college students. They now present a pamphlet for college use on hygienic subjects peculiar to wartime.

Under the title of military hygiene, the physical fitness of the soldier, his equipment his training, recreation and sanitary measures are discussed. Civilian defense measures include organization, air raids and gas decontamination services. A special chapter on first aid for communities in wartime completes the volume.

This booklet should not be restricted to college students who may be called into military service. The simple, clear description of its subject matter warrants its use for the personnel employed in community civilian defense.

ALFRED E. SHIPLEY

### Diseases of the Hand

*The Hand, Its Disabilities and Diseases.* By Condict W. Cutler, Jr. M.D. Philadelphia, W. B. Saunders Company, [c. 1942]. 572 pages, illustrated. 8vo. Cloth, \$7.50.

THIS volume comprises some 550 pages, 274 illustrations and an excellent index. The author discusses anatomy, acute and chronic infections, burns, war

wounds, fractures, amputations, tendon injuries, and tumors. Manifestations in the hand of many systemic diseases, nervous conditions, and rare diseases of the skin, are discussed.

The general practitioner will find in this book all the facts necessary for treating ordinary hand injuries and infections. Further, the index provides a reference for many of the rarer conditions.

ROBERT F. BARBER

### Radiation Therapy

*Roentgen Treatment of Diseases of the Nervous System.* By Cornelius G. Dyke, M.D. and Leo M. Davidoff, M.D. Philadelphia, Lea & Febiger, [c. 1942]. 198 pages, illustrated. 8vo. Cloth, \$3.25.

THIS book is a timely compilation of the most recent methods in the radiotherapeutic treatment of diseases of the central nervous system.

Past experiences with the treatment of various tumors of the brain, cord and adjacent tissues are thoroughly reviewed and the results made the basis for the present forms of therapy.

The all too short chapter on the treatment of miscellaneous conditions of the nervous system such as multiple sclerosis, trigeminal neuralgia, herpes zoster, etc., is nevertheless very interesting and instructive. Although one might wish that this branch of the subject had been more fully treated, that which is given thoroughly, even though briefly, covers the subject.

This work should be in the library of everyone anticipating radiation therapy of diseases of the central nervous system.

A. L. L. BELL

**BOOKS RECEIVED** for review are promptly acknowledged in this column; we assume no other obligation in return for the courtesy of those sending us the same. In most cases, review notes will be promptly published shortly after acknowledgment of receipt has been made in this column.

*Fundamentals of Endocrinology and Practical Endocrinotherapy.* By Max Rubinstein. Los Angeles, Cal., Research Publishing Company, [c. 1943]. 407 pages. 8vo. Cloth, \$8.00.

*A Study of Endometriosis, Endosalpingiosis, Endocervicosis, and Peritoneo-Ovarian Sclerosis.* By James R. Goodall, M.D. Philadelphia, J. B. Lippincott Company, [c. 1943]. 140 pages, illustrated, including 6 color plates. 8vo. Cloth, \$5.50.

*Diseases of the Nose, Throat and Ear.* By William L. Ballenger, M.D., & Howard C. Ballenger, M.D.

8th ed. Philadelphia. Lea & Febiger, [c. 1943]. 975 pages, illustrated. 8vo. Cloth, \$12.00.

*Flying Health.* By M. Martyn Kafka. Harrisburg, Pennsylvania, Military Service Publishing Company, [c. 1942]. 243 pages, illustrated. 12mo. Cloth, \$2.00.

*Essentials of Nutrition.* By Henry C. Sherman & Caroline Sherman Lanford. 2nd ed. New York, The Macmillan Company, [c. 1943]. 422 pages, illustrated. 8vo. Cloth, \$3.50.